

REMARKS

Claims 1-14, 16 and 18-25 are pending in the present application.

Applicants thank the Examiner for the opportunity to discuss this application in the telephonic Interview conducted on October 26, 2010, and in particular for the opportunity to distinguish the subject matter of the present claims by pointing out how the simultaneously presented, non-overlapping substitution masking of the prior art (according to Jiang et al.) fails to teach or suggest the sequential presentation of a stimulus followed by a mask that is placed over or in place of the stimulus, with the mask having the recited advantageous feature of a “filled circle”. The Remarks presented below elaborate on these distinctions. Also submitted herewith is a Declaration under 37 C.F.R. §1.132, in which additional evidence is presented to show the unexpected advantages provided by performing the masking step using a mask that comprises an image having at least one filled circle.

Reconsideration of the application is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 103

I. The PTO rejects claims 1-4, 6, 7, 9, 11-15 and 17-24 under 35 U.S.C. §103, alleging that they are unpatentably obvious over Teicher et al. (U.S. 2004/0002636, “Teicher”) in view of Roenker (U.S. Pat. 5,801,810) in view of Jiang et al. (2001 *Vis. Res.* 41:3121, “Jiang”). In particular, the PTO asserts that Teicher teaches a method that includes the steps of (i) presenting a visual test stimulus, (ii) measuring a user response, and (iii) repeating (i) and (ii) to develop a user profile, but concedes that Teicher fails to describe a step of masking the visual test stimulus by placing a mask over or in place of the stimulus, and that Teicher also fails to describe comparing the user profile to a reference profile to assess cognitive impairment in the user. The PTO then asserts that Roenker remedies these deficiencies of Teicher by describing a visual attention capability test that includes a step of masking the visual test stimulus by placing a mask over or in place of the stimulus, and that also includes a step of comparing the user

profile to a reference profile and “assessing cognitive impairment or visual impairment of the user.”

The PTO concedes that Teicher and Ronker fail to disclose a mask that comprises an image having at least one filled circle, but alleges that Jiang teaches a means for masking a visual stimulus with a mask that comprises an image having at least one filled circle, which mask the skilled person would have found obvious to combine with the teachings of Teicher and Ronker to provide more accurate results. Applicants note that the rejections of claims 15 and 17 are moot in view of the cancellation of these two claims, well prior to the issuance by the PTO of the Office Action of June 2, 2010.

II. The PTO rejects claim 5 under 35 U.S.C. §103 over Teicher, Roenker and Jiang as described above, and further in view of Hongo et al. (U.S. Pat. 5,345,944, “Hongo”). Specifically, the PTO concedes that the combination of Teicher, Roenker and Jiang fails to disclose an error rate curve chart representing the error rate, but alleges that Hongo remedies this deficiency by disclosing an error rate curve chart, which the skilled person would have found obvious to combine with Teicher, Roenker and Jiang, to provide an alternative means for outputting information for expert analysis.

III. Claims 8 and 25 stand rejected under 35 U.S.C. §103 as allegedly obvious over Teicher, Roenker and Jiang as described above, and further in view of Harrison et al. (U.S. Pat. 6,317,128, “Harrison”). The PTO asserts that Harrison discloses a graphical user interface and a response rate curve, which a person having ordinary skill in the art would have found obvious to combine with Teicher, Roenker and Jiang to provide an alternative means for outputting information for expert analysis.

IV. Claim 10 stands rejected under 35 U.S.C. §103 as allegedly obvious over Teicher, Roenker and Jiang as described above, and further in view of Polat et al. (U.S. 6,876,758, “Polat”). Polat is asserted to teach a means for improving a user’s visual perception, and to disclose generation of a reference profile using previously generated data from a reference group comprising cognitively normal individuals.

V. The PTO rejects claims 1, 2, 3, 9-15 and 17-24 under 35 U.S.C. §103 as being allegedly obvious over Polat in view of Roenker, in view of Jiang. The PTO asserts that

Polat teach a means for improving a user's visual perception, and further disclose, *inter alia*, steps of presenting a visual test stimulus to a user, measuring a user response that provides information about the user's perception of a characteristic of the stimulus and about the response time taken for the user to respond, repeating these steps, generating a reference profile either from cognitively normal individuals or from previously generated data, and presenting the user with two or more different test stimuli. The PTO concedes, however, that Polat fail to disclose, *inter alia*, masking the test stimulus by placing a mask over or in place of the entire visual test stimulus. The Examiner alleges, however, that the skilled person would have found it obvious to modify the teachings of Polat by using a mask according to Roenker, and further that it would have been obvious to employ the mask of Jiang having at least one filled circle. Applicants note that these rejections of claims 15 and 17 are moot in view of the cancellation of these two claims, well prior to the issuance by the PTO of the Office Action of June 2, 2010.

VI. The PTO rejects claims 4, 6 and 7 under 35 U.S.C. §103 as allegedly obvious over Polat, Roenker and Jiang as described above, and further in view of Teicher. In particular, the PTO asserts that the person having ordinary skill in the art would have found it obvious to add calculation of a mean error rate and a mean response time, as taught by Teicher, to the combined teachings of Polat, Roenker and Jiang, to diagnose visual or cognitive problems.

VII. Claim 5 stands rejected under 35 U.S.C. §103 as allegedly obvious over Polat, Roenker and Jiang, and further in view of Hongo. Specifically, the PTO concedes that the combination of Polat, Roenker and Jiang fails to disclose an error rate curve chart representing the error rate, but alleges that Hongo remedies this deficiency by disclosing an error rate curve chart, which the skilled person would have found obvious to combine with Polat, Roenker and Jiang, to provide an alternative means for outputting information for expert analysis. This rejection resembles item II above, with the exception that Polat (also described above) is here asserted in place of Teicher.

VIII. The PTO rejects claim 8 under 35 U.S.C. §103 as allegedly obvious over Polat, Roenker, Jiang and Teicher as described above, and further in view of Harrison. This rejection resembles item III above, with the addition of Polat (also described above). The PTO asserts that Harrison discloses a graphical user interface and a response rate curve, which a

person having ordinary skill in the art would have found obvious to combine with the other cited documents to provide an alternative means for outputting information for expert analysis.

IX. The PTO rejects claim 25 under 35 U.S.C. §103 as allegedly obvious over Polat, Roenker and Jiang as described above, and further in view of Harrison, also described above. This rejection resembles item III above, with the reliance upon Polat (also described above) instead of Teicher. The PTO asserts that Harrison discloses a graphical user interface and a response rate curve, which a person having ordinary skill in the art would have found obvious to combine with the other cited documents to provide an alternative means for outputting information for expert analysis.

In response to I-IX, Applicants respectfully traverse these grounds of rejection. The presently claimed embodiments are directed in pertinent part to a method of assessing cognitive impairment of a user comprising the steps of (a) presenting a visual test stimulus to the user for a pre-determined test stimulus exposure duration; (b) masking the test stimulus by placing a mask over or in place of the entire visual test stimulus, wherein the mask comprises an image having at least one filled circle; (c) measuring a response from the user, the response providing information about (i) the user's perception of a characteristic of the test stimulus, and (ii) a response time taken for the user to respond; (d) repeating steps (a) to (c) to develop a user profile; and (e) comparing the user profile with a reference profile, and thereby assessing cognitive impairment in the user. For reasons given herein and also for reasons previously made of record, the cited documents fail to teach or suggest the subject matter encompassed by the instant claims in a manner that could reasonably have been predicted by a person having ordinary skill in the art at the time the instant application was filed.

It is respectfully submitted that the PTO fails to establish a *prima facie* case of obviousness where the PTO erroneously alleges that a person having ordinary skill in the art would have had any reasonable expectation of successfully combining the teachings of Jiang with those of any combination of Roenker, Teicher and/or Polat. As explained herein and in the Declaration Under 37 C.F.R. §1.132 that is submitted herewith, the "mask" of Jiang is fundamentally different in nature and effect from the mask of Roenker and so cannot properly be

alleged to represent an obvious modification of Roenker, for use in combination with the method of Teicher and/or of Polat. Moreover, the applicants submit that neither from Jiang nor from any other knowledge in the art could it have been predicted that the use of a mask comprising an image having at least one filled circle would advantageously result in the presently claimed method of assessing cognitive impairment.

The mask of Jiang does not comprise “an image” and therefore the skilled person would not reasonably have expected to combine Jiang with Teicher and Roenker. On the contrary, the actual “mask” of Jiang et al. is an imaginary square that is not an image, but is instead an illusion that manifests as an effect in the user’s brain. Jiang et al. do not teach that the mask itself as described therein comprises four dots; instead at most Jiang et al. teach that the four corner dots influence the user’s brain to form the imaginary perception of a square mask.

As explained herein and in the Declaration Under 37 C.F.R. §1.132 submitted herewith, Jiang at most describes “meta-contrast” (Type B) masking, which surrounds but does not overlap the visual test stimulus, and which is designed purposely to promote persistence of a visual test stimulus image as a sensory memory (“iconic memory”). Jiang fails in any way to teach or suggest “backward masking” (Type A), such as the mask that is placed over or in place of the entire visual test stimulus according to the instant claims, and which is designed purposely to prevent persistence of a visual test stimulus image as a sensory memory (iconic memory).

“Meta-contrast” masking according to Jiang, and “backward” masking according to the instant claims, are thus understood in the art to operate according to fundamentally *opposite* principles which are, respectively, the promotion and the prevention of persisting iconic memory. It is therefore strenuously submitted that at the time the instant application was filed, the ordinarily skilled person absolutely would not have been motivated even remotely to consider combining any teaching or suggestion from Jiang’s meta-contrast masking with Roenker’s backward masking. By alleging otherwise, the PTO ignores art-accepted, established differences between meta-contrast masking and backward masking, and further impermissibly employs hindsight in view of the disclosure in the instant application.

The “delayed offset” meta-contrast masking of Jiang is a simultaneous presentation of the visual test stimulus *and* the “object substitution” cue (the imaginary square

image), whereas the present claims relate to a mask that *replaces* the test stimulus and that is presented subsequent to the stimulus (backward masking), not simultaneously with the stimulus. Jiang therefore teaches away from the subject matter of the instant claims. In particular, it is submitted that where Jiang teaches that simultaneous presentation of the masking cue is required for “substitution masking”, the person having ordinary skill in the art would not reasonably have expected successfully to combine Jiang with any combination of Roenker and Teicher and/or Polat. In particular, meta-contrast masking of Jiang is irrelevant to backward masking of Roenker because Roenker at most teaches “pattern masking”, which uses sequential presentation of the stimulus followed by the mask, *i.e.*, backward masking.

Jiang also teaches that “substitution masking” can be achieved even with a mask that does not spatially overlap the target, such as mask placed adjacent to the target. (Jiang et al., page 3122, right-hand column, 1st complete paragraph). The meta-contrast masking of Jiang fails to teach or suggest “placing a mask over or in place of the entire visual test stimulus” and further fails to contemplate such a mask that “comprises an image having at least one filled circle.” The disclosure of Jiang *in toto* has nothing to do with backward masking according to the presently claimed methods. Therefore, and contrary to the assertions made by the PTO, the skilled person would not have combined Jiang with any combination of Roenker and Teicher and/or Polat, and even given the combination of Jiang, Teicher (and/or Polat) and Roenker, the skilled person would not reasonably have expected successfully to practice the presently encompassed subject matter, which relates in pertinent part to “placing a mask over or in place of the entire visual test stimulus.”

Furthermore, Jiang taken alone or in any combination with the other cited documents fails to teach or suggest a mask that comprises “an image having at least one filled circle.” It is submitted that the skilled person would not reasonably have expected to arrive at the subject matter of the instant claims by combining Jiang with any combination of Roenker and Teicher and/or Polat. The “mask” of Jiang is merely an imaginary square in the mind of the user that masks by “object substitution” and that is formed by meta-contrast masking, as discussed above. Nowhere, however, does Jiang teach or suggest that the imaginary square mask generated by “delayed offset” as described therein comprises “at least one filled circle.” On the

contrary, Jiang describes a “square” as conferring the masking effect, not a square having at least one filled circle. At most, then, the imaginary square mask of Jiang merely has corners that are defined by the locations of the four dots and not by the dots themselves, but the mask itself does not comprise an image having the dots, much less “at least one filled circle.”

Jiang also teaches away from the subject matter of the instant claims by disclosing (Introduction, paragraphs 6-7) that “delayed offset” alone is enough to trigger “substitution masking” in the user’s mind, regardless of the category or features of the mask image. It is therefore submitted that the skilled person would not have understood Jiang as predicting that a mask should comprise an image having at least one filled circle, even were it to be assumed, *arguendo*, that Jiang’s limited teachings with regard to meta-contrast masking could have had any relevance to the fundamentally opposite purpose and effect of backward masking.

Accordingly, it is submitted that for reasons given herein, Jiang should be withdrawn as a reference because the PTO fails to establish that the prior art taught or suggested the feature of a mask that is placed over or in place of the entire visual test stimulus, which mask comprises an image having at least one filled circle. Moreover, because this feature is recited in each independent claim (claims 1, 18, 20 and 22) and because the PTO relies on Jiang for all of the present rejections, either (i) in combination with at least Teicher and Roenker, or (ii) in combination with at least Polat and Roenker, it is further respectfully submitted that the independent claims, and all dependent claims therefrom, are free of the art.

Specifically and for reasons given herein, applicants submit that Jiang is not a properly asserted reference and should be withdrawn by the PTO, and that the remaining documents cited by the PTO fail to teach or suggest the subject matter of the instant claims, for reasons also given herein and previously made of record (see, *e.g.*, applicants’ responses submitted to the PTO on June 19, 2009 and March 1, 2010). In addition, submitted herewith is a Declaration Under 37 C.F.R. §1.132 in which evidence is presented that the recited feature of an image having at least one filled circle confers unexpected advantages on the mask, and is not merely a design choice.

Including for reasons given above, all grounds for rejection asserted by the PTO are traversed. Additionally, the rejections summarized above as items II-IV and VI-IX merely

reflect assertion by the PTO of documents teaching individual features that may be recited in certain of the dependent claims, but the PTO fails to provide evidence or reasoning as why the person having ordinary skill in the art at the time the instant application was filed would have predictably arrived at the claimed combination as a whole, with the requisite reasonable expectation of success.

It is axiomatic that for a claim to be interpreted properly, the encompassed subject matter must be considered as a whole. See *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct 1727, 1734, 182 USPQ2d 1385 (2007). Applicants respectfully submit that the subject matter of the present claims, when properly taken as a whole as required, is readily distinguishable over the documents cited by the PTO, whether taken individually or in combination. According to the United States Supreme Court, “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” (*KSR v. Teleflex*, 550 U.S. ___, 82 127 S. Ct. at 1742, USPQ2d 1385, 1396, emphasis added). “The determination of obviousness is made with respect to the subject matter as a whole, not separate pieces of the claim.” See *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct 1727, 1734 [182 USPQ2d 1385] (2007); *Kimberly-Clark Corp. v. Johnson & Johnson*, 745 F.2d 1437, 1448 [223 USPQ 603] (Fed. Cir. 1984).” *Sanofi-Synthelabo v. Apotex Inc.*, 89 USPQ2d 1370, 1377 (Fed. Cir. 2008)(emphasis added).

In asserting the combination of Roenker and Jiang with one or more of Teicher, Polat, Hongo and Harrison to reject specific features recited in the respective dependent claims of items II-IV and VI-IX above, the PTO merely demonstrates that each such feature (*e.g.*, the error rate curve of Hongo in II and VII; the graphical user interface and response rate curve of Harrison in III, VIII and IX; the reference profile of Polat in IV; the calculation of a mean error rate and a mean response time according to Teicher in VI); was independently known in the prior art, which is not a prima facie showing under *KSR* that the subject matter of the claim as a whole is obvious. That is to say, the PTO fails to establish why the presently claimed combination of elements, as expressly recited in the instant claims, would have been suggested to a person having ordinary skill in the art at the time of filing, absent the teachings of the present application.

The PTO thus impermissibly considers separate elements of the claims, but fails to consider the claimed combination as a whole, and therefrom to present any reason as to why the skilled person would have arrived at the subject matter of the instant claims, starting from the cited references. Therefore it is submitted that the PTO fails to establish a *prima facie* case of obviousness, where in each rejection asserted under §103 no evidence or reasoning has been provided as to how the prior art suggested, *inter alia*, the instant methods which comprise, in pertinent part, placing a mask over or in place of the entire visual test stimulus, wherein the mask comprises an image having at least one filled circle.

Applicants therefore submit that the instant claims satisfy the requirement for non-obviousness over the cited references, because the Examiner has not established a *prima facie* case of obviousness. In this regard, the cited references not only fail to teach or suggest combining all of the claim features, but fail to provide any apparent reason to practice the presently claimed embodiments with the *requisite* reasonable expectation of success. *See KSR v. Teleflex, Inc.*, No 04-1350 at 4, 14 (U.S. Apr. 30, 2007) In the instant case, the skilled person could not reasonably have expected to arrive at the presently claimed embodiments, where the cited documents fail, *inter alia*, to provide the requisite *predictability* with respect to the use of a mask that is placed over or in place of the entire visual test stimulus, wherein the mask comprises an image having at least one filled circle.

In view of the foregoing, it is respectfully submitted that the subject matter of the instant claims fully satisfies the requirements of 35 U.S.C. §103, such that the rejections should be withdrawn.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,
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Enclosures:

Declaration Under 37 C.F.R. 1.132 of Dr. Gregory Yelland

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